

REMARKS

In the Office Action dated March 23, 2006, claims 1-16 were presented for examination. Claim 1 has been amended. Claims 1-16 were rejected under 35 U.S.C. §101 as being directed to non-statutory subject matter. Claims 1, 2, 8 and 10 were rejected under 35 U.S.C. §102(b) as being anticipated by United States patent No. 5,394,151 issued to Knaell et al (hereinafter "Knaell"). Claims 3, 4-7, 9, and 11-16 were variously rejected under 35 U.S.C. § 103(a) as being unpatentable over Knaell in view of one or more of: United States Patent No. 5,799,100 issued to Clarke et al (hereinafter "Clarke"), United States Patent No. 5,912,993 issued to Puetter et al (hereinafter "Puetter"), United States Patent No. 4,099,179 issued to Hofstein (hereinafter "Hofstein"), United States Patent No. 5,226,019 issued to Bahorich (hereinafter "Bahorich"), and United States Patent No. 5,252,922 issued to Larson (hereinafter "Larson").

Examiner's particular rejections are now addressed in turn.

Claims 1, 8, 10, 11, 14, and 15 have been amended to more distinctly claim the present invention. Support for these amendments is clearly found in the specification of the present application. Thus, no new matter has been added.

Claim 4 is cancelled and claims 5-7 are amended to depend from claim 1.

Applicants submit that the claims, as amended satisfy the requirements of 35 U.S.C. §101. In particular, applicants submit that the claims, as amended, are not merely performing mathematical functions on a set of abstract data. Rather, the claimed invention generates a signal which is "useful, concrete and tangible." *State Street Bank & Trust Co. v. Signature Financial Group Inc.*, 149 F. 3d 1368, 1373, 47 USPQ2d 1596, 1601-02 (Fed. Cir. 1998). In particular, independent claim 1 recites "converting the reconstruction signal back into the original coordinate basis to generate the previously produced signal." Clearly, the reconstruction of the previously produced signal is a "useful, concrete and tangible" result. Accordingly, applicants assert that the claimed invention constitutes statutory subject matter and respectfully request Examiner's withdrawal of the §101 rejection.

Claims 1, 2, 8, and 10 were rejected under 35 U.S.C. §102(b) based on Knaell, Applicants respectfully assert that Knaell does not teach each and every limitation of claim 1, as amended. In particular, Knaell does not teach "altering an original coordinate basis of the

set of data to produce at least one other coordinate basis, the at least one other coordinate basis having a plurality of spaces with a lower dimensionality than a space within the original coordinate basis, the set of data in the at least one other coordinate basis represented by a second prediction function of the previously produced signal in the at least one other coordinate basis.” Applicants note that simply rotating an antenna (Knaell, column 8 lines 3-10) does not result in the creation of one or more other coordinate bases for the data collected by the antenna, nor a plurality of spaces within such other coordinate bases having a lower dimensionality than a space in the original coordinate basis, as recited in claim 1 as amended. In general, Knaell discusses converting two-dimensional data into three-dimensional data, but that discussion does not teach obtaining a lower dimensionality of the three-dimensional space. On the contrary, the three-dimensional data is a higher dimensionality.

In addition, Knaell does not disclose the limitation of claim 1, as amended, of “converting the reconstruction signal back into the original coordinate basis to generate the previously produced signal.” Knaell instead discloses displaying a 3-D image comprising Fourier-transformed data without converting the signal back into the original two-dimensional coordinate basis. While Knaell does disclose an optional two-dimensional result, that result utilizes alternative equipment (column 9 lines 50-60) that does not involve a change of coordinate basis at any step in the process, much less a conversion back into an original coordinate basis.

Furthermore, as Examiner acknowledged in arguments regarding claim 4, Knaell “does not disclose expressly that the Bayesian reconstruction employs the maximum entropy method.” In contrast, claim 1, as amended, recites, in part, a “Bayesian reconstruction utilizing a maximum entropy method capable of operation on positive, negative, and complex values.”

Because Knaell does not disclose each limitation of claim 1, as amended, applicants submit that claim 1 is allowable over this reference.

Applicants also note that claim 1, as amended includes the limitation previously taught in claim 4 regarding the employ of a maximum entropy method within the Bayesian reconstruction. Examiner asserts that Puetter utilizes a maximum entropy method in its Bayesian reconstruction of a signal. However, the traditional form of the entropy method employed by Puetter is restricted to the reconstruction of strictly positive distributions. In

contrast, Applicants employ a form of the maximum entropy method that is capable of operation on positive and negative values.

Claims 2, 8, and 10 depend from claim 1 and therefore are believed to be allowable for the same reasons given regarding claim 1, as amended, in addition to claiming further limitations.

Turning now to the §103 rejections, claims 3 and 9 were rejected under 35 U.S.C § 103(a) based on Knaell and Clarke. However, neither reference alone or in combination discloses each and every limitation of claims 3 and 9, which depend from claim 1. In particular, neither Clarke nor Knaell teach a “Bayesian reconstruction utilizing a maximum entropy method that is capable of operation on positive, negative and complex values.” Accordingly, because Knaell and Clarke fail to teach each and every limitation of claims 3 and 9, which depend from claim 1, Applicants submit that claims 3 and 9 are allowable over the cited references.

Claims 4-7 were rejected under 35 U.S.C. 103(a) as being unpatentable over Knaell in view of Puetter. Claim 4 has been cancelled and claims 5-7 now depend from claim 1. Claims 5-7 are thus believed to be allowable for at least the same reasons as claim 1 as amended. In particular, applicants note that neither Knaell or Puetter teach “performing a Bayesian reconstruction utilizing the second prediction function to produce a reconstruction signal, the Bayesian reconstruction utilizing a maximum entropy method capable of operation on positive, negative and complex values” as recited in claim 1 and claims 4-7 which depend from claim 1.

Claims 11, 12 and 15 were rejected under 35 U.S.C § 103(a) as being unpatentable over Knaell in view of Hofstein. Hofstein discloses a method for storing and displaying a signal. No mention is made in the Hofstein patent regarding reconstruction of signals. Hofstein’s method simply proposes an avenue of retaining an electrical signal long enough to display it on a raster scan television display. An electrical signal in Hofstein may be produced (column 6 lines 26-31), converted (column 6 lines 35-41), stored and displayed (column 6 lines 45-50), but it is not reconstructed.

Additionally, neither Knaell or Hofstein alone or in combination teach “converting the reconstruction signal back into the original coordinate basis to generate the previously produced signal”, as recited in claim 1 and claims 11, 12, and 15 which depend from claim 1.

Hofstein and Knaell further fail to provide a method of “performing a Bayesian reconstruction utilizing the second prediction function to produce a reconstruction signal, the Bayesian reconstruction utilizing a maximum entropy method capable of operation on positive, negative, and complex values” as recited in claim 1 and claims 11, 12, and 15 which depend from claim 1.

Accordingly, because Knaell and Hofstein do not teach each and every limitation of claims 11, 12 and 15 that depend from claim 1, applicant submits that claims 11, 12, and 15 are allowable over these references.

Claims 13 and 16 were rejected under 35 U.S.C § 103(a) as being unpatentable over Knaell in view of Hofstein and Bahorich. Claim 13 depends directly from claim 11 and indirectly from claim 1, and is therefore believed to be allowable for the same reasons given above for claims 1, as amended, and 11. Claim 16 depends directly from claim 15 and indirectly from claim 1 and is therefore believed to be allowable for the same reasons given above for claims 1, as amended, and 15.

In particular neither Knaell, Hofstein or Bahorich alone or in combination teach “performing a Bayesian reconstruction utilizing the second prediction function to produce a reconstruction signal, the Bayesian reconstruction utilizing a maximum entropy method capable of operation on positive, negative, and complex values,” as recited in claim 1 and claims 13 and 16 which depend from claim 1. Nor do these references teach “converting the reconstruction signal back into the original coordinate basis to generate the previously produced signal,” as recited in claim 1 and claims 13 and 16 which depend from claim 1.

Accordingly, because Knaell, Hofstein, and Bahorich do not teach each and every limitation of claims 13 and 16 which depend from claim 1, applicants submit that claims 13 and 16 are allowable over these references.

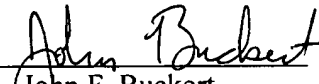
Claim 14 was rejected under 35 U.S.C § 103(a) as being unpatentable over Knaell in view of Larson. Claim 14 depends from claim 1, and neither Knaell or Larson alone or in combination teach each and every limitation of claim 1 and claim 14 which depends from claim 1. In particular, Knaell and Larson do not teach performance of a “Bayesian reconstruction utilizing a maximum entropy method capable of operation on positive, negative, and complex values.” Nor do the references teach “converting a reconstruction

signal back into the original coordinate basis to generate the previously produced signal.”
Accordingly, applicants submit that claim 14 is allowable over these references.

No new matter is added by way of the present Amendment and Remarks as support is found throughout the originally filed specification and claims. Withdrawal of all rejections and prompt issuance of a Notice of Allowance is respectfully requested.

The Examiner is invited to contact Applicant’s attorney at the below-listed phone number regarding this Response or otherwise concerning the present application. If there are any charges due with respect to this Amendment or otherwise, please charge them to Deposit Account No. 06-1130 maintained by Applicant’s attorneys.

Respectfully submitted,
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